

Application No. 10/730329  
Second Supplemental Amendment dated April 14, 2006  
After Final Office Action of November 25, 2005

Docket No.: 013207.0164CSUS

### AMENDMENTS TO THE CLAIMS

1. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

aircraft cellular communication means for establishing at least one cell site to communicate via communications with at least one of said plurality of wireless subscriber devices,

a plurality of base station means to communicate via communications with at least one of said plurality of wireless subscriber devices, each at least one of said plurality of base station means operating in a cellular technology that differs from those of the remaining ones of said plurality of base station means;

air-to-ground network means for radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground, comprising:

a plurality of ground-based base station means for communicating with at least one of said plurality of wireless subscriber devices; and

aircraft interface means for interconnecting said aircraft network means and said air-to-ground network means to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

data concentrator means for converting the individual traffic and signaling channels received from said plurality of base station means to an aggregate data stream;

wherein said air-to-ground network means further comprises:

data router disaggregator means for disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of ground-based base station means.

Claims 2 and 3 (Canceled)

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4. (Previously presented) The system for providing wireless communication services of claim 1 wherein said aircraft interface means comprises:

authentication means for verifying the identity of said plurality of wireless subscriber devices.

5. (Previously presented) The system for providing wireless communication services of claim 1 wherein said aircraft interface means comprises:

authorization means for determining a set of services that each of said plurality of wireless communication devices is authorized to receive.

6. (Previously presented) The system for providing wireless communication services of claim 1 wherein said air-to-ground network means comprises:

wireless subscriber device means, connected to said at least one base station means and responsive to receipt of radio frequency communication signals from a one of said plurality of wireless subscriber devices, for emulating operation of said one wireless subscriber device in communicating with said ground-based communications system.

7. (Previously presented) The system for providing wireless communication services of claim 1 wherein said air-to-ground network means comprises:

transmitter means for generating downlink radio frequency signals for transmission to said at least one transceiver located on the ground;

receiver means for receiving uplink radio frequency signals received from said at least one transceiver located on the ground; and

antenna means located on an external surface of said aircraft for exchanging said downlink and uplink radio frequency signals between said transmitter and said receiver means and said at least one transceiver located on the ground.

Claims 8 and 9 (Canceled)

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10. (Previously presented) The system for providing wireless communication services of claim 1 wherein said air-to-ground network means comprises:

ground station controller means for mobility management and hand over management for said aggregate data stream, comprising subscriber traffic from said plurality of wireless subscriber devices.

Claim 11 (Canceled)

12. (Previously presented) The system for providing wireless communication services of claim 1 wherein said air-to-ground network means further comprises:

a plurality of mobile switching system means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems.

13. (Original) The system for providing wireless communication services of claim 1 wherein said aircraft network means comprises:

aircraft cellular communication means for establishing at least one wireless LAN-based cell site to communicate via data-based communications with at least one of said plurality of wireless subscriber devices.

14. (Currently amended) A method for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

generating, in an aircraft network located in said aircraft, radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

establishing at least one cell site to communicate via communications with at least one of said plurality of wireless subscriber devices,

operating a plurality of base stations to communicate via communications with at least one of said plurality of wireless subscriber devices, each at least one of said plurality of base stations operating in a cellular technology that differs from those of the remaining ones of said plurality of base stations;

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generating, in an air-to-ground network, radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground; and

interconnecting said aircraft network and said air-to-ground network to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

converting the ~~subscriber individual~~ traffic and signaling channels received from said plurality of wireless ~~subscriber devices~~ base stations to an aggregate data stream,

communicating via a plurality of ground-based base stations for communicating with at least one of said plurality of wireless subscriber devices,

disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of ground-based base stations.

Claims 15 and 16 (Canceled)

17. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of interconnecting comprises:

verifying the identity of said plurality of wireless subscriber devices.

18. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of interconnecting comprises:

determining a set of services that each of said plurality of wireless communication devices is authorized to receive.

19. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of generating, in an air-to-ground network, comprises:

emulating, in response to receipt of radio frequency communication signals from a one of said plurality of wireless subscriber devices, operation of said one wireless subscriber device in communicating with said ground-based communications system.

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20. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of generating, in an air-to-ground network, comprises:  
generating downlink radio frequency signals for transmission to said at least one transceiver located on the ground;  
receiving uplink radio frequency signals received from said at least one transceiver located on the ground; and  
exchanging said downlink and uplink radio frequency signals with said at least one transceiver located on the ground.

Claims 21 and 22 (Canceled)

23. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of interconnecting comprises:  
mobility management and hand over management for said aggregate data stream, comprising subscriber traffic from said plurality of wireless subscriber devices.

Claim 24 (Canceled)

25. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of interconnecting further comprises:  
interconnecting, via a plurality of mobile switching systems, said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems.

26. (Original) The method for providing wireless communication services of claim 14 wherein said step of generating, in an aircraft network, comprises:  
establishing at least one wireless LAN-based cell site to communicate via data-based communications with at least one of said plurality of wireless subscriber devices.

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27. (Currently amended) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft-based network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

aircraft cellular communication means for establishing at least one cell site to communicate via communications with at least one of said plurality of wireless subscriber devices,

a plurality of base station means to communicate via communications with at least one of said plurality of wireless subscriber devices, each at least one of said plurality of base station means operating in a cellular technology that differs from those of the remaining ones of said plurality of base station means,

data concentrator means for converting the individual traffic and signaling channels received from said plurality of base station means to an aggregate data stream;

ground-based network means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems, comprising:

a plurality of ground-based base station means for communicating with at least one of said plurality of wireless subscriber devices,

data router disaggregator means for disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of ground-based base station means; and

inner network means for interconnecting said aircraft-based network means and said ground-based network means to establish communications between said plurality of wireless subscriber devices and said conventional Voice and Data switching systems by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network.

Claims 28 and 29 (Canceled)

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30. (Previously presented) The system for providing wireless communication services of claim 27 wherein said aircraft-based network means further comprises:  
authentication means for verifying the identity of said plurality of wireless subscriber devices.

31. (Previously presented) The system for providing wireless communication services of claim 27 wherein said aircraft-based network means further comprises:  
authorization means for determining a set of services that each of said plurality of wireless communication devices is authorized to receive.

32. (Previously presented) The system for providing wireless communication services of claim 27 wherein said inner network means comprises:  
wireless subscriber device means, connected to said at least one base station means and responsive to receipt of radio frequency communication signals from a one of said plurality of wireless subscriber devices, for emulating operation of said one wireless subscriber device in communicating with said ground-based network means.

33. (Original) The system for providing wireless communication services of claim 32 wherein said air-to-ground network means comprises:  
transmitter means for generating downlink radio frequency signals for transmission to said at least one transceiver located on the ground;  
receiver means for receiving uplink radio frequency signals received from said at least one transceiver located on the ground; and  
antenna means located on an external surface of said aircraft for exchanging said downlink and uplink radio frequency signals between said transmitter and said receiver means and said at least one transceiver located on the ground.

Claims 34 and 35 (Canceled)

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36. (Previously presented) The system for providing wireless communication services of claim 27 wherein said ground-based network means comprises:

ground station controller means for mobility management and hand over management for said aggregate data stream, comprising subscriber traffic from said plurality of wireless subscriber devices.

Claim 37 (Canceled)

38. (Previously presented) The system for providing wireless communication services of claim 27 wherein said ground-based network means further comprises:

a plurality of mobile switching system means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems.

39. (Original) The system for providing wireless communication services of claim 27 wherein said aircraft-based network means comprises:

aircraft cellular communication means for establishing at least one wireless LAN-based cell site to communicate via data-based communications with at least one of said plurality of wireless subscriber devices.

40. (Previously Presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

aircraft cellular communication means for establishing at least one cell site to communicate via communications with at least one of said plurality of wireless subscriber devices, comprising a plurality of base station means to communicate via communications with at least one of said plurality of wireless subscriber devices, said plurality of base station means operating in at least two different cellular technologies;

air-to-ground network means for radio frequency communications between said aircraft and a plurality of ground-based communications networks having at least one transceiver located on the ground;

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aircraft interface means for interconnecting said aircraft network means and said air-to-ground network means to establish communications between said plurality of wireless subscriber devices and said plurality of ground-based communications networks, comprising:

data concentrator means for converting the subscriber traffic and signaling channels received from said plurality of base station means to an aggregate data stream;

wherein said air-to ground network means comprises:

data disaggregator means for disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of ground-based communications networks.

41. (Previously presented) A method for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

generating, in an aircraft network located in said aircraft, radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

establishing at least one cell site to communicate via communications with at least one of said plurality of wireless subscriber devices comprising operating a plurality of base stations to communicate via communications with at least one of said plurality of wireless subscriber devices, said plurality of base stations operating in at least two different cellular technologies;

generating, in an air-to-ground network, radio frequency communications between said plurality of wireless subscriber devices and a plurality of ground-based communications networks having at least one transceiver located on the ground;

interconnecting said aircraft network and said air-to-ground network to establish communications between said plurality of wireless subscriber devices and said plurality of ground-based communications networks, comprising:

converting the subscriber traffic and signaling channels received from said plurality of base stations to an aggregate data stream;

wherein said step of generating radio frequency communications between said plurality of wireless subscriber devices and a plurality of ground-based communications networks further comprises:

disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of ground-based communications networks.

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42. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft-based network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft, comprising:

data concentrator means for converting the individual traffic and signaling channels received from said plurality of base station means to an aggregate data stream comprising a plurality of base station means to communicate via communications with at least one of said plurality of wireless subscriber devices, said plurality of base station means operating in at least two different cellular technologies;

ground-based network means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems;

inner network means for interconnecting said aircraft-based network means and said ground-based network means to establish communications between said plurality of wireless subscriber devices and said conventional Voice and Data switching systems, comprising:

data disaggregator means for disaggregating said aggregate data stream by technology into a plurality of data streams and delivering each of said plurality of data streams to a corresponding one of said plurality of conventional Voice and Data switching systems.

43. (Previously presented) The system for providing wireless communication services of claim 1 wherein said air-to-ground network means comprises:

transmitter means for generating downlink radio frequency signals for transmission to said at least one transceiver located on the ground via at least one satellite;

receiver means for receiving uplink radio frequency signals received from said at least one satellite; and

antenna means located on an external surface of said aircraft for exchanging said downlink and uplink radio frequency signals between said transmitter and said receiver means and said at least one satellite.

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44. (Previously presented) The system for providing wireless communication services of claim 1 wherein said aircraft interface means comprises:

radio frequency management means for managing at least one radio frequency attribute of said system for providing wireless communication services from the set of radio frequency attributes including: the in-cabin radio frequency environment which controls wireless subscriber device access to services; the EMI/RFI environment by commanding the wireless subscriber devices to the lowest necessary radio frequency power; and a radio frequency scheme for signaling and traffic which does not cause interference to operations in the ground-based communication network

Claim 45 (Canceled)

46. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

air-to-ground network means for radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground; and

aircraft interface means for interconnecting said aircraft network means and said air-to-ground network means to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

in-cabin call termination means for providing a signaling termination for each call from a one of said wireless subscriber devices that are located in the aircraft to provide protocol management of signaling to both said ground-based communications network and said wireless subscriber devices, comprising:

first aircraft interface channel means for providing a radio frequency interface to the wireless subscriber devices to provide a pseudo base station with transparent handset signaling, to mimic the operation of the ground-based base station means to the wireless subscriber devices; and

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second aircraft interface channel means for providing a radio frequency interface to the ground-based base station means to provide mirrored handset signaling to mimic the operation of the wireless subscriber devices to the ground-based base station means.

47. (Previously presented) The system for providing wireless communication services of claim 46 wherein said in-cabin call termination means comprises:

spoofing means for spoofing the wireless subscriber devices by intelligently removing and replacing selected network signaling information in the protocol management.

48. (Previously presented) The system for providing wireless communication services of claim 1 wherein said aircraft interface means comprises:

in-cabin call disabling means for disabling operation of selected ones of said wireless subscriber devices that are located in the aircraft.

Claims 49 - 51 (Canceled)

52. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

air-to-ground network means for radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground, comprising:

data concentrator means for converting the subscriber traffic and signaling channels received from said ground-based communications network to an aggregate data stream; and

aircraft interface means for interconnecting said aircraft network means and said air-to-ground network means to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

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data disaggregator means for converting the aggregate data stream received from said air-to-ground network means into subscriber traffic and signaling channels for said plurality of wireless subscriber devices.

53. (Previously presented) The system for providing wireless communication services of claim 1 further comprising:

wherein said aircraft interface means further comprises:

call management means for maintaining call data relating to said wireless subscriber devices that are generating said subscriber traffic and signaling channels;

wherein said air-to-ground network means further comprises:

a plurality of ground-based base station means for communicating with at least one of said plurality of wireless subscriber devices via said aggregate data stream; and

handoff management means, responsive to initiation of a call handoff from a first one of said ground-based base station means to a second one of said ground-based base station means, for redirecting transmission of said aggregate data stream from said first ground-based base station means to said second ground-based base station means.

54. (Previously presented) The system for providing wireless communication services of claim 1 wherein said aircraft interface means further comprises:

call management data handoff means for forwarding said call data, relating to said wireless subscriber devices that are generating said subscriber traffic and signaling channels, to said second ground-based base station means.

55. (Previously presented) The system for providing wireless communication services of claim 14 wherein said step of generating radio frequency communications between said aircraft and a ground-based communications network comprises:

generating downlink radio frequency signals for transmission by a transmitter located in said aircraft to said at least one satellite;

receiving uplink radio frequency signals from said at least one satellite in a receiver located in said aircraft; and

exchanging via an antenna located on an external surface of said aircraft said downlink and uplink radio frequency signals between said transmitter and said receiver and said at least one satellite.

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56. (Previously presented) The method for providing wireless communication services of claim 14 wherein said step of interconnecting comprises:

managing at least one radio frequency attribute of said system for providing wireless communication services from the set of radio frequency attributes including: the in-cabin radio frequency environment which controls wireless subscriber device access to services; the EMI/RFI environment by commanding the wireless subscriber devices to the lowest necessary radio frequency power; and a radio frequency scheme for signaling and traffic which does not cause interference to operations in the ground-based communication network.

Claim 57 (Canceled)

58. (Previously presented) A method for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

generating, in an aircraft network located in said aircraft, radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

generating, in an air-to-ground network, radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground; and

interconnecting said aircraft network and said air-to-ground network to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

providing a signaling termination for each call from a one of said wireless subscriber devices that are located in the aircraft to provide protocol management of signaling to both said ground-based communications network and said wireless subscriber devices, comprising:

providing a first radio frequency interface to the wireless subscriber devices to provide a pseudo base station with transparent handset signaling, to mimic the operation of the ground-based communications network to the wireless subscriber devices; and

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providing a second radio frequency interface to the ground-based communications network to provide mirrored handset signaling to mimic the operation of the wireless subscriber devices to the ground-based communications network.

59. (Previously presented) The system for providing wireless communication services of claim 58 wherein said step of providing a signaling termination comprises:

spoofing the wireless subscriber devices by intelligently removing and replacing selected network signaling information in the protocol management.

60. (Previously presented) The system for providing wireless communication services of claim 14 wherein said step of interconnecting comprises:

disabling operation of selected ones of said wireless subscriber devices that are located in the aircraft.

Claims 61 – 63 (Canceled)

64. (Previously presented) A method for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

generating, in an aircraft network located in said aircraft, radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

generating, in an air-to-ground network, radio frequency communications between said aircraft and a ground-based communications network system having at least one transceiver located on the ground, comprising:

converting the subscriber traffic and signaling channels received from said ground-based communications network to an aggregate data stream; and

interconnecting said aircraft network and said air-to-ground network to establish communications between said plurality of wireless subscriber devices and said ground-based communications network by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

converting the aggregate data stream received from said air-to-ground network means into subscriber traffic and signaling channels for said plurality of wireless subscriber devices.

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65. (Previously presented) The method for providing wireless communication services of claim 64 further comprising:

wherein said step of generating further comprises:

maintaining call data relating to said wireless subscriber devices that are generating said subscriber traffic and signaling channels;

wherein said step of interconnecting further comprises:

communicating via a plurality of base stations with at least one of said plurality of wireless subscriber devices via said aggregate data stream; and

redirecting, in response to initiation of a call handoff from a first one of said ground-based base stations to a second one of said ground-based base stations, transmission of said aggregate data stream from said first ground-based base stations to said second ground-based base stations.

66. (Previously presented) The method for providing wireless communication services of claim 65 wherein said step of interconnecting further comprises:

forwarding said call data, relating to said wireless subscriber devices that are generating said subscriber traffic and signaling channels, to said second ground-based base station.

67. (Previously presented) The system for providing wireless communication services of claim 27 wherein said inner network means comprises:

transmitter means for generating downlink radio frequency signals for transmission to said at least one transceiver located on the ground via at least one satellite;

receiver means for receiving uplink radio frequency signals received from said at least one satellite; and

antenna means located on an external surface of said aircraft for exchanging said downlink and uplink radio frequency signals between said transmitter and said receiver means and said at least one satellite.

68. (Previously presented) The system for providing wireless communication services of claim 27 wherein said inner network means comprises:

radio frequency management means for managing at least one radio frequency attribute of said system for providing wireless communication services from the set of radio frequency



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attributes including: the in-cabin radio frequency environment which controls wireless subscriber device access to services; the EMI/RFI environment by commanding the wireless subscriber devices to the lowest necessary radio frequency power; and a radio frequency scheme for signaling and traffic which does not cause interference to operations in the ground-based communication network.

Claim 69 (Canceled)

70. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft-based network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

ground-based network means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems; and

inner network means for interconnecting said aircraft-based network means and said ground-based network means to establish communications between said plurality of wireless subscriber devices and said conventional Voice and Data switching systems by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

in-cabin call termination means for providing a signaling termination for each call from a one of said wireless subscriber devices that are located in the aircraft to provide protocol management of signaling to both said ground-based communications network and said wireless subscriber devices, comprising:

first aircraft interface channel means for providing a radio frequency interface to the wireless subscriber devices to provide a pseudo base station with transparent handset signaling, to mimic the operation of the ground-based communications network to the wireless subscriber devices; and

second aircraft interface channel means for providing a radio frequency interface to the ground-based base station means to provide mirrored handset signaling to mimic the operation of the wireless subscriber devices to the ground-based communications network.

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71. (Previously presented) The system for providing wireless communication services of claim 70 wherein said in-cabin call termination means comprises:

spoofing means for spoofing the wireless subscriber devices by intelligently removing and replacing selected network signaling information in the protocol management.

72. (Previously presented) The system for providing wireless communication services of claim 27 wherein said inner network means comprises:

in-cabin call disabling means for disabling operation of selected ones of said wireless subscriber devices that are located in the aircraft.

Claims 73 - 75 (Canceled)

76. (Previously presented) A system for providing wireless communication services to a plurality of wireless subscriber devices that are located in an aircraft, comprising:

aircraft-based network means located in said aircraft for generating radio frequency communication signals to communicate with at least one of said plurality of wireless subscriber devices that are located in said aircraft;

ground-based network means for interconnecting said communications from at least one of said plurality of wireless subscriber devices with conventional Voice and Data switching systems; and

inner network means for interconnecting said aircraft-based network means and said ground-based network means to establish communications between said plurality of wireless subscriber devices and said conventional Voice and Data switching systems by exchanging both subscriber traffic and at least one of network signaling and administrative data on separate concurrently available logical channels between said aircraft network means and said ground-based communications network, comprising:

data concentrator means for converting the subscriber traffic and signaling channels received from said ground-based communications network to an aggregate data stream,

data disaggregator means for converting the aggregate data stream received from said air-to-ground network means into subscriber traffic and signaling channels for said plurality of wireless subscriber devices.

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77. (Previously presented) The system for providing wireless communication services of claim 76 further comprising:

wherein said ground-based network means further comprises:

call management means for maintaining call data relating to said wireless subscriber devices that are generating said individual traffic and signaling channels;

wherein said inner network means further comprises:

a plurality of ground-based base station means for communicating with at least one of said plurality of wireless subscriber devices via said aggregate data stream; and

handoff management means, responsive to initiation of a call handoff from a first one of said ground-based base station means to a second one of said ground-based base station means, for redirecting transmission of said aggregate data stream from said first ground-based base station means to said second ground-based base station means.

78. (Previously presented) The system for providing wireless communication services of claim 76 wherein said inner network means further comprises:

call management data handoff means for forwarding said call data, relating to said wireless subscriber devices that are generating said subscriber traffic and signaling channels, to said second ground-based base station means.